

REMARKS

Claims 4, 6-9 and 13-14 are now pending in the application. Applicants thank the Examiner for the courtesies extended in the telephonic interview of March 22, 2006. In the telephonic interview, differences between the claimed invention and the prior art of record were discussed. Although no agreement was reached, the Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

Claims 4 and 15 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicants regard as the invention. This rejection is respectfully traversed.

The Examiner alleges that there is insufficient antecedent basis for "said liquid material" in claims 4 and 15. Claim 15 is cancelled. The rejection of claim 15, therefore, is moot.

With respect to claim 4, this claim is amended to recite an electronic circuit comprising an electronic substrate made from a porous material, wherein a circuit pattern and an insulating pattern are permeated beneath a surface of the electronic substrate. Claim 4 also recites that the circuit pattern includes an active element and is comprised of at least one of a conductive material and a semiconducting material, and a first liquid material. The insulating pattern is comprised of at least one of an insulating material and a dielectric material, and a second liquid material. By these amendments, the term "said liquid material" has been replaced with the terms "first liquid material" and

“second liquid material.” Furthermore, Applicants respectfully assert that there is sufficient antecedent basis for each of these terms. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 4, 6-9 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hiroka et al. (U.S. Pat. No. 6,835,889). This rejection is respectfully traversed.

As stated above, claim 4 has been amended to recite an electronic circuit comprising an electronic substrate made from a porous material, wherein a circuit pattern and an insulating pattern are permeated beneath a surface of the electronic substrate. Claim 4 also recites that the circuit pattern includes an active element and is comprised of at least one of a conductive material and a semiconducting material, and a first liquid material. The insulating pattern is comprised of at least one of an insulating material and a dielectric material, and a second liquid material. Lastly, claim 4 is amended to recite that the first liquid material has a non-affinity for the insulating material and the dielectric material of the insulating pattern. These amendments are supported throughout the specification and drawings as originally filed. No new matter has been added. Specifically, these amendments are supported at, for example, Figures 4A and 4B.

Hiroka does not teach or suggest such a structure. That is, Hiroka does not teach a circuit pattern and an insulating pattern that are permeated beneath a surface of

the electronic substrate. In contrast, Hiroka only teaches a circuit pattern formed beneath a surface of a substrate (e.g., see Figure 1 of Hiroka).

As stated above, the present invention has both a circuit pattern and an insulating pattern that are permeated beneath a surface of the electronic substrate. This is accomplished by using a first liquid and a second liquid, respectively. To this end, the first liquid material has a non-affinity for either the insulating material or dielectric material of the insulating layer. In this manner, when the insulating layer is formed before the circuit pattern, the first liquid material including the conductive material for the circuit pattern is repelled by the insulating layer which when applied to the substrate to form the circuit pattern. This is advantageous when forming narrow patterns.

Hiroka is silent with respect to these aspects of the claimed invention. That is, by only teaching a conductive layer formed beneath a surface of a substrate, Hiroka fails to teach the claimed non-affinity characteristics of the first liquid material because it would not be necessary when forming only a conductive layer. Because this limitation is not necessary in Hiroka, such a limitation is not inherent in Hiroka.

Moreover, because Hiroka fails to teach or suggest these aspects of the claimed invention, Applicants respectfully assert that the claimed invention would not have been obvious. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

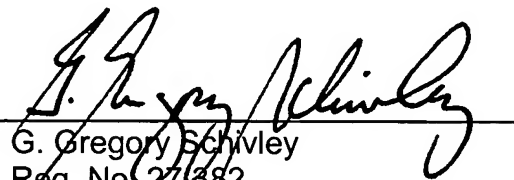
CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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By: _____


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